DM-MD8X8/16X16/32X32

DigitalMedia™ Switchers

quickstart guide

1 Before Starting

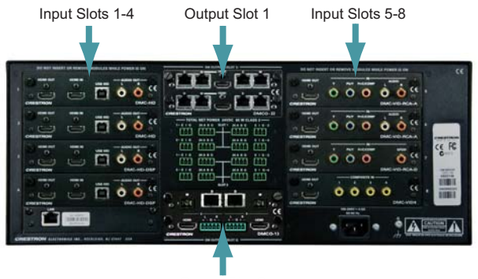
This Quickstart Guide applies to the DM-MD8X8-RPS, DM-MD16X16-RPS, and DM-MD32X32-RPS as well as to the DM-MD8X8, DM-MD16X16, and DM-MD32X32.

CAUTION: Do not connect power cords until instructed to do so.

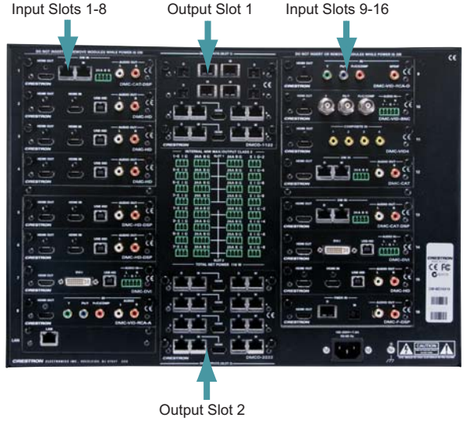
2 Adding or Replacing Input/Output Cards

Input/output (I/O) cards are installed prior to shipment of a DigitalMedia™ switcher. If, however, I/O cards are to be added or replaced in the field, refer to the following illustrations and instructions. For additional information, refer to the latest version of the DigitalMedia Card Installation Guide (Doc. 6757), which is available from the Crestron® Web site (www.crestron.com/manuals).

DM-MD8X8



DM-MD16X16



DM-MD16X16 output cards are not field installable.

DM-MD32X32

CAUTION: I/O cards are electrostatic sensitive devices. Wear a grounding strap or touch the metal chassis of a known grounded device while handling and installing the cards.

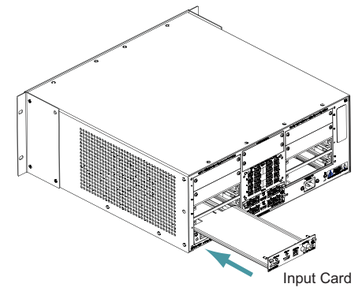
NOTE: Ensure that the power cord is not connected before installing I/O cards.

NOTE: Cards can be installed into any of the slots provided; however, it is recommended that the cards be installed into the slots in numerical order.

NOTE: DM-MD16X16 output cards are not field installable. If a different configuration is required, contact Crestron customer service.

To add or replace I/O cards (excluding DM-MD16X16 output cards):

1. Do either of the following:
   - If adding an I/O card, remove the screws that secure the cover plate of an unused slot.
   - If replacing an I/O card, remove the screws that secure the card to be replaced, and then remove the card.
2. Insert the card to be installed into the slot side rails, and ensure that the card is fully seated in the slot.
3. Using the screws removed in step 1, secure the card in position.



3 Connecting Outputs

Connections to DMCO output cards vary depending on the particular card. For connection information, refer to the following list of connectors available in various combinations on the various output cards.

MMF/SC (DM 8G Fiber)

Connects to DM 8G® fiber input of DM® receivers or other DM devices using simplex multimode fiber optic cable (sold separately). Using CRESFIBER8G, the maximum transmission distance is 1000 feet (~300 meters). Using CRESFIBER, CRESFIBER-SINGLE-SC, or generic OM3 simplex multimode fiber optic cable, the maximum transmission distance is 500 feet (~150 meters).

SMF/LC (DM 8G SM Fiber)

Connects to DM 8G SMF input of DM switchers or other DM devices using single-mode fiber optic cable (sold separately). Using CRESFIBER8G-SM or generic G.652.D (or better) simplex single-mode fiber optic cable, the maximum transmission distance is 7.5 miles (12 km).

D and M (DM Fiber, Dual Output Shown)

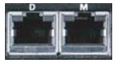
Connect to DM fiber input of DM receivers or other DM devices using duplex multimode fiber optic cable (sold separately). Using CRESFIBER8G, CRESFIBER, CRESFIBER-DUAL-SC, or generic OM2/OM3 duplex multimode fiber optic cable, the maximum transmission distance is 1000 feet (~300 meters).

DM OUT (DM 8G+)

Connects to DM 8G+™ input of DM receivers or other DM devices using DM-CBL-8G DigitalMedia 8G™ cable, DM-CBL DigitalMedia cable, DM-CBL-D DigitalMedia D cable, or generic CAT5e (or better) UTP or STP. Shielded cable and connectors are recommended to safeguard against unpredictable environmental electrical noise which may impact performance at resolutions above 1080p.

POE IN

Connects to 802.3af Power over Ethernet (PoE) power source (sold separately) to enable Power over DM (PoDM). For additional information, refer to section 5.



D and M (DM CAT)

Connect to DM CAT input of DM receivers or other DM devices using DM-CBL DigitalMedia cable. Up to two DM repeaters (Model DM-DR, sold separately) may be required.

HDMI

Connects to HDMI® digital video/audio input of a local HDMI display/receiver or of a daisy-chained DM switcher using CBL-HD cable (sold separately).

L and R (Audio)

Connects to balanced/unbalanced stereo line level input.

For complete system design guidelines, refer to the latest version of the Crestron DigitalMedia Design Guide, (Doc. 4546), which is available from the Crestron Web site (www.crestron.com/dmresources).

For details, refer to the latest version of the **DM-MD8X8/16X16/32X32** DigitalMedia™ Switchers Operations Guide, Doc. 6755.

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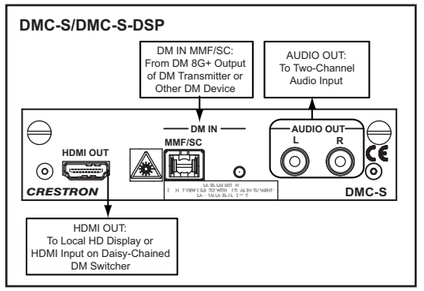
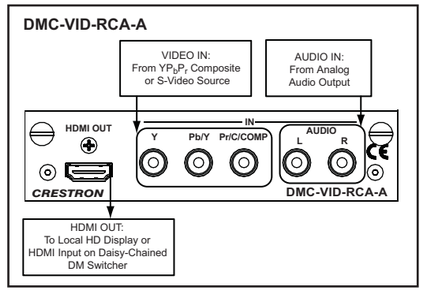
4 Connecting Sources to Input Cards

Various input cards are available for the DM switchers, allowing a variety of input sources. The following illustrations show some of the available input cards and indicate the corresponding input sources.

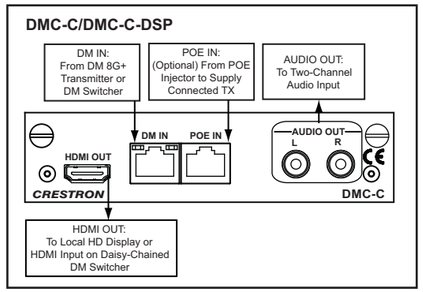
DMC-S/DMC-S-DSP


DM IN MMF/SC: From DM 8G+ Output of DM Transmitter or Other DM Device
AUDIO OUT: To Two-Channel Audio Input
DM IN
MMF/SC
HDMI OUT
AUDIO OUT
L
R
CRESTRON
DMC-S
HDMI OUT: To Local HD Display or HDMI Input on Daisy-Chained DM Switcher

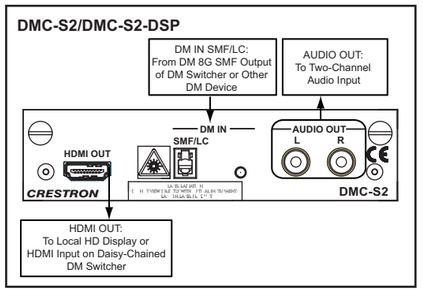
DMC-VID-RCA-A



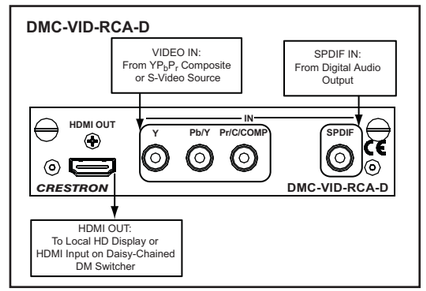
DMC-C/DMC-C-DSP


DM IN: From DM 8G+ Transmitter or DM Switcher
POE IN: (Optional) From POE Injector to Supply Connected TX
AUDIO OUT: To Two-Channel Audio Input
DM IN
POE IN
HDMI OUT
AUDIO OUT
L
R
CRESTRON
DMC-C
HDMI OUT: To Local HD Display or HDMI Input on Daisy-Chained DM Switcher

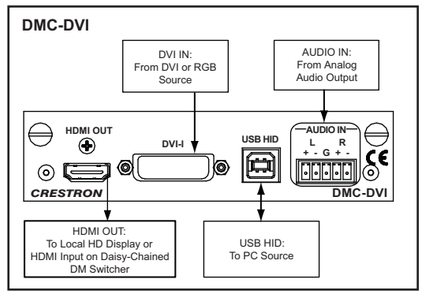
DMC-S2/DMC-S2-DSP


DM IN SMF/LC: From DM 8G SMF Output of DM Switcher or Other DM Device
AUDIO OUT: To Two-Channel Audio Input
DM IN
SMF/LC
HDMI OUT
AUDIO OUT
L
R
CRESTRON
DMC-S2
HDMI OUT: To Local HD Display or HDMI Input on Daisy-Chained DM Switcher

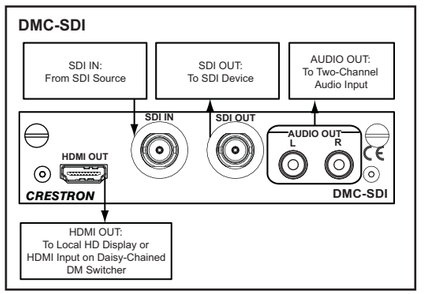
DMC-VID-RCA-D



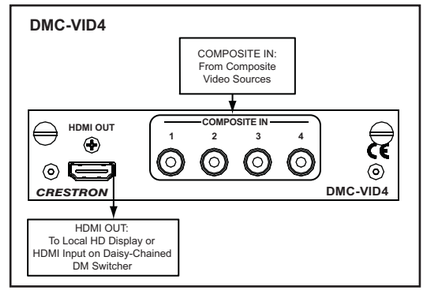
DMC-DVI



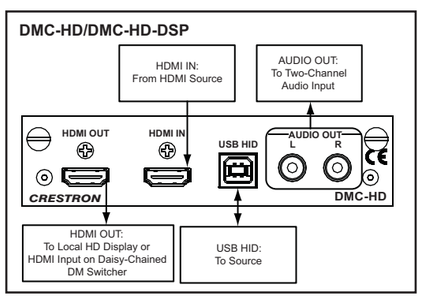
DMC-SDI



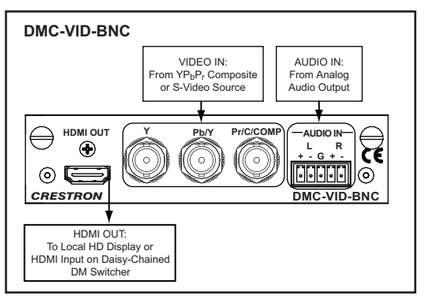
DMC-VID4



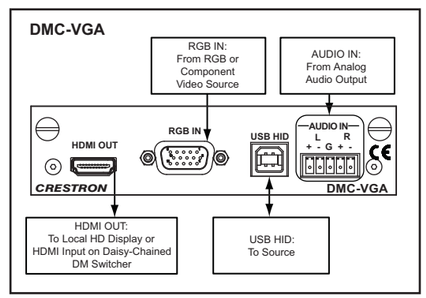
DMC-HD/DMC-HD-DSP



DMC-VID-BNC

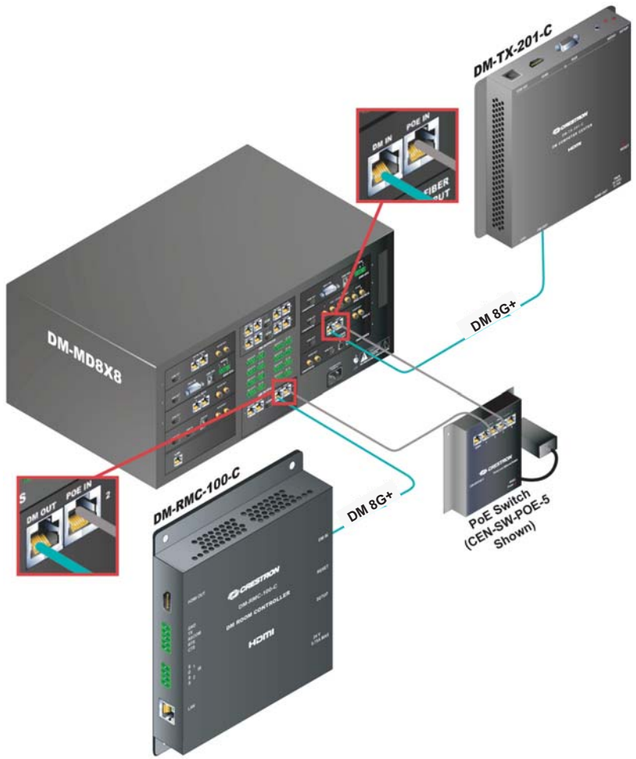


DMC-VGA



5 Connecting Power Source to DM 8G+ Devices

When connected to a DM switcher, DM 8G+ devices—such as the DM-TX-201-C and DM-RMC-100-C—can be powered using Power over DM (PoDM). A DM switcher can power connected DM 8G+ devices by injecting 802.3af Power over Ethernet (PoE) into the DMCO-5x/DMCO-5xxx series (DMC-CO-HD) output card or DMC-C/DMC-C-DSP input card of the switcher as shown below.



To power a connected DM 8G+ device using PoDM, connect the **POE IN** port of the switcher to a PoE source such as the CEN-SW-POE-5.

NOTE: The **POE IN** port does not provide a network connection. The **POE IN** port is used to enable PoDM only.

NOTE: When PoDM is used to power a DM 8G+ device, connection of the DM 8G+ device to the included power pack is not required. If PoDM is not used to power a DM 8G+ device, connection of the DM 8G+ device to the included power pack is required.

NOTE: The internal power supply of a DM switcher does not power DM 8G+ devices.

For details, refer to the latest version of the **DM-MD8X8/16X16/32X32** DigitalMedia™ Switchers Operations Guide, Doc. 6755.

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6 Applying Power to the DM Switcher

To apply power to the DM switcher, connect the AC power cord to the switcher, and then connect the power cord to AC power.

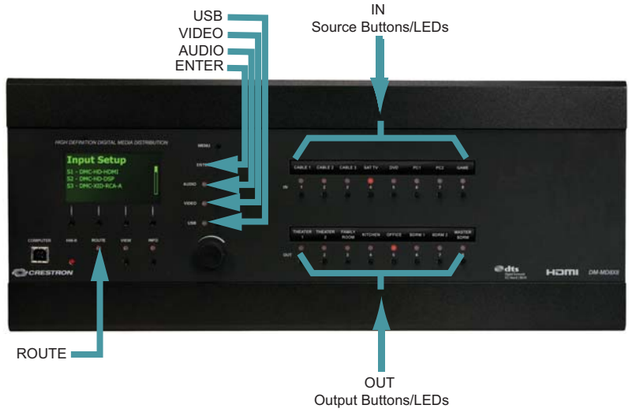
NOTE: DM switchers do not have a power switch.

7 Routing Inputs

Using the front panel controls, route inputs to one or more of the available outputs.

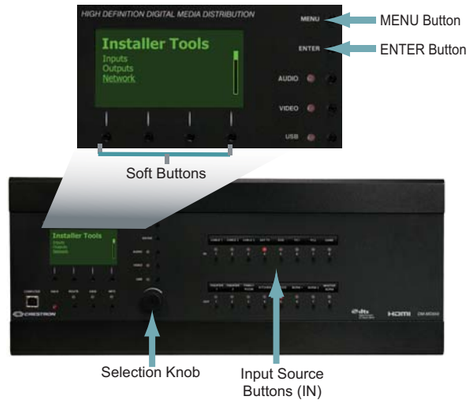
1. Press **ROUTE.** The **AUDIO**, **VIDEO**, and **USB** LEDs light, indicating the signal types that are to be routed. (Pressing the **AUDIO/VIDEO/USB** button deselects/selects the corresponding signal type.)
2. Press the desired input source button (**IN**). The corresponding LED lights. The LEDs of any outputs to which the input is currently routed also light.
3. Press one or more of the output buttons (**OUT**). The corresponding LED(s) flash to indicate that the input is not yet routed.
4. Press the **ENTER** button to route the input. The LED(s) of the selected output(s) light steadily, and the display shows the input number and the outputs to which the input is routed.

To disconnect an input from an output, press **ROUTE** and then press the desired output button. The display shows *IN None*. Press **ENTER.** The output is disconnected from the input.



8 Configuring the DM Switcher

Configure input, output, and network settings of the DM switcher using the front panel controls and *Installer Tools*.



Refer to the latest version of the DigitalMedia Switchers Operations Guide (Doc. 6755) for configuration information. For information about Private Network Mode configuration, refer to the section that follows.

9 Configuring Private Network Mode

Private Network Mode (PNM) allows a DM system to consume only one IP address in the public network. PNM is enabled by default.

When PNM is enabled, be aware of the following:

- In a DM system containing a single DM switcher, the DM switcher is the only DM device that consumes an IP address. When DHCP is enabled, the IP address is set dynamically. When DHCP is disabled, the IP address is set manually.
- All DM I/O cards and DM endpoints (transmitters and receivers) that are connected to the DM switcher are hidden from the public network and cannot be reached directly; instead, all communication is managed through the DM switcher. As a result, PNM creates a completely private IP network for all DM cards and endpoints.

NOTE: When connected to a DM switcher, a DM endpoint must *not* have its convenient Ethernet port connected to the LAN. A DM endpoint receives its network connection via the DM switcher. The convenient Ethernet port of a DM endpoint is available for connection to a network device such as a PC, Blu-ray player, or TV.

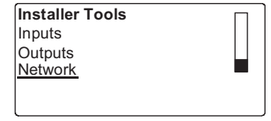
- For installations in a corporate or university setting, PNM does not heavily impact the network. Ethernet ports on DM endpoints remain visible to the public network. PNM also prevents RSTP traffic from reaching the public network.

When multiple DM switchers are cascaded, assign a unique system ID to each switcher. PNM uses the system ID of each switcher to determine the internal IP address used by each device in the DM system.

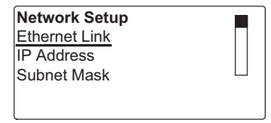
NOTE: When PNM is enabled, each DM switcher must connect directly to the LAN. A DM switcher cannot connect to the LAN through another DM switcher.

To assign a unique system ID to a DM switcher:

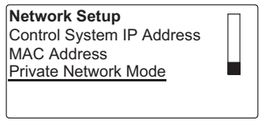
1. Open *Installer Tools*.
2. Turn the selection knob to highlight *Network*, and then press the **ENTER** button.



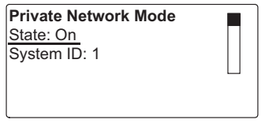
The “Network Setup” configuration screen appears.



3. Turn the selection knob to highlight *Private Network Mode,* and then press the **ENTER** button.



The “Private Network Mode” configuration screen appears.



Private Network Mode is enabled by default (*State* is set to *On*).

(Continued on following page)

For details, refer to the latest version of the **DM-MD8X8/16X16/32X32** DigitalMedia™ Switchers Operations Guide, Doc. 6755.

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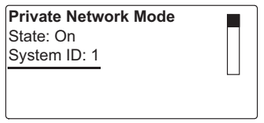
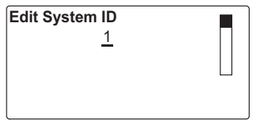
9 Configuring Private Network Mode *(Continued)*

4. Turn the selection knob to highlight *System ID*, and then press the **ENTER** button.



The “Edit System ID” configuration screen appears.



The system ID ranges from 1 to 64 and must be uniquely set for each DM switcher in the system. The default system ID is 1.

5. Turn the selection knob until the desired system ID appears for the DM switcher, and then press the **ENTER** button.

6. Press the **MENU** button to exit *Installer Tools*.

10 Designing and Configuring Video/Audio EDID

EDID (Extended Display Identification Data) describes the video and audio capabilities of a display. EDID resides in a display and is read by a source device. The source device uses the EDID to determine the best resolution/audio format to output.

As part of the system design process, EDID design is as important as the selection of sources, displays, and DM components. Designing an EDID configuration and manually setting the EDID ensures that all source devices provide the output that meets the expectations of the end user.

When designing an EDID configuration, consider the following scenarios:

- **Scenario 1: Source devices are user-provided laptops, and end users expect laptop mirroring.** For best results, include the native resolution of each laptop in the EDID configuration. To achieve this, select several popular resolutions and ensure that all selected resolutions are supported by all displays in the system. A variety of laptops can then display their native resolution while also sending that resolution to the displays.
- **Scenario 2: Source devices are *not* user-provided laptops.** Select the preferred resolution based on the capabilities of the displays in the system. If all displays do not share the same native resolution, determine whether there is a common resolution among the displays. Select only that resolution in the EDID configuration. The addition of multiple resolutions to the EDID configuration is not necessary when controlling the source device.

A DM switcher provides configurable video/audio EDID for each input.

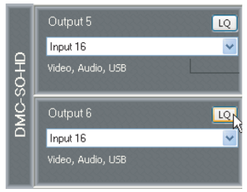
NOTE: HDMI inputs support both video and audio EDID. DVI and VGA inputs support video EDID only.

To configure video/audio EDID, use DMTool in Crestron Toolbox™. DMTool allows the EDID configuration to be set manually while ensuring that the EDID is accurate. For detailed information about configuring video/audio EDID, refer to the Crestron Toolbox help file.

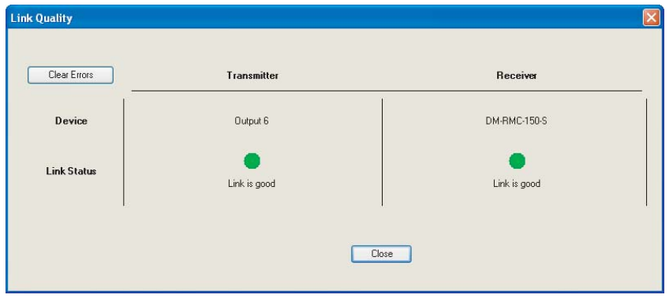
11 Testing Cable Link Status

Using DMTool, test the link status of DM 8G multimode fiber, DM 8G SM (single-mode) fiber, and DM 8G+ cable connections between the DM switcher and a DM transmitter, DM receiver, or other DM switcher.

To test cable link status, do the following. In the DM switcher tab within DMTool, click the **LQ** (link quality) button for the output whose DM 8G fiber, DM 8G SM fiber, or DM 8G+ cable connection is to be tested.



The “Link Quality” dialog box appears, displaying the link status of the cable connected to a DM 8G fiber, DM 8G SM fiber, or DM 8G+ connector of a DM transmitter, receiver, or other DM switcher.



The “Link Quality” dialog box provides link status indications as listed in the following table.

STATUS COLOR	STATUS MESSAGE	DESCRIPTION
Green	Link is good.	No errors have been detected. No action is required.
Yellow	Link is fair.	Video may be present; however, some errors have been detected. Check cable connections. Using a cable tester, check cable terminations.
Red	Link is unstable.	Video is not present. Too many errors have been detected. Check cable connections. Using a cable tester, check cable terminations.
	Link is down.	Video is not present. Cable is unplugged or disconnected from downstream device. Check cable connections.

The specific patents that cover Crestron products are listed at patents.crestron.com.

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